01-24-00

A

Docket No.: 5852-07-LAV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION TRANSMITTAL

Honorable Assistant Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of inventors(s): Shiuh John Luo and Lucy Lee Wong

For (title): ORAL CARE CHEWING GUMS AND CONFECTIONS

Which is a:

[X] parent
[ ] continuation
[ ] continuation-in-part
[ ] divisional

pursuant to:

[X] 37 C.F.R. §1.53(b)

[ ] 37 C.F.R. §1.53(d)

This application claims benefit

[ ] pursuant to 35 U.S.C. §120 of prior U.S. application

Serial No.: Filed:

[X] pursuant to 35 U.S.C. §119(e) of prior U.S. Provisional application

Serial No.: 60/126,032 Filed: March 25, 1999

[ ] pursuant to 35 U.S.C. §119(a)-(d) of prior foreign application filed ________________ in ______ as application no. ____________. A certified copy of the original foreign application, specification and drawings

Enclosed please find:

1. [X] **SPECIFICATION INCLUDING CLAIMS**

This application includes:
14 Pages of Specification
1 Pages of Abstract
2 Pages of Claims
0 Sheets of Drawing figures

==

CERTIFICATION PURSUANT TO 37 C.F.R. §1.10

I hereby certify that this Application Transmittal and the documents referred to as enclosed herein are being deposited with the United States Postal Service on this Date Jan 21, 2000, in an envelope bearing "Express Mail Post Office to Addressee" Mailing Number EJ547440318US addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Mary M. Helmken
(Typed or printed name of person mailing)

Mary M. Helmken
(Signature of person mailing papers, Date)

lv2v3372.doc

2. [X] **AMENDMENTS**

[ ] A preliminary amendment pursuant to 37 C.F.R. §1.121 is attached.

[ ] Amend the specification by inserting before the first line the sentence:

This is a [ ] continuation
[ ] continuation-in-part
[ ] divisional

of copending application Serial No.
filed on

[X] Amend specification by inserting before the first line the sentence:

This application claims priority to provisional application

Serial No.: 60/126,032
Filed: March 25, 1999

[ ] Amendments to claims:

[ ] Amend the claims by deleting claims ____.

[ ] Amend the claims by adding new claims ____ set forth in the preliminary amendment.

3. [X] **COMBINED DECLARATION AND POWER OF ATTORNEY**

[X] Enclosed

[ ] Not enclosed. This application is made by a person authorized pursuant to 37 C.F.R. §1.41(c) on behalf of all of the above-named inventors. The declaration or oath, along with the surcharge required by 37 C.F.R. §1.16(e) will be filed subsequently.

4. [ ] **DRAWINGS**

Drawings pursuant to 37 C.F.R. §1.81.
[ ] formal.
[ ] informal.

5. **FILING FEE**

CLAIMS AS FILED

	NUMBER FILED	**NUMBER EXTRA**	**RATE**	**BASIC FEE $760.00**
Total Claims	12 - 20 =	0 x	$ 22.00 =	-0-
Independent Claims	4 - 3 =	1 x	$ 82.00 =	82.00
Multiple dependent claim(s), if any			$270.00 =	
			TOTAL	842.00

[ ] Processing and retention fee ------
(37 C.F.R. §§ 1.53(d) and 1.21(1))

TOTAL FEES $ 842.00

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[ ] No filing fee is to be paid at this time. The filing fee and the surcharge required by 37 C.F.R. §1.16(e) will be paid subsequently.

[X] Charge Deposit Account 23-0453 in the amount of $ 842.00 (total fees) A triplicate copy of this transmittal is attached.

6. [X] **AN ASSIGNMENT** of this invention to Warner-Lambert Company, 201 Tabor Road, Morris Plains, New Jersey 07950:

[X] is enclosed.

[ ] will follow.

7. **AUTHORIZATION TO CHARGE ADDITIONAL FEES**

[X] The commissioner is hereby authorized to charge all fees required during the entire pendency of this application except the issue fee to Deposit Account 23-0453.

8. **INSTRUCTIONS AS TO OVERPAYMENT**

[X] Credit any overpayment to Deposit Account 23-0453.

Respectfully submitted,

Jan. 21, 2000
DATE

Linda A. Vag

Linda A. Vag
AGENT FOR APPLICANT(S)
REG. NO. 32,071

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5852-07-LAV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR LETTERS PATENT FOR

ORAL CARE CHEWING GUMS AND CONFECTIONS

This application claims priority under 35 U.S.C. 119(e) to provisional application 60/126,032 filed March 25, 1999.

Applicants: Shiuh John Luo
Lucy Lee Wong

ORAL CARE CHEWING GUMS AND CONFECTIONS

BACKGROUND OF THE INVENTION

Field of the Invention:

This invention concerns a method for promoting dental hygiene in particular by reducing plaque, whitening teeth, preventing tooth demineralization and providing tooth remineralization. The method employs a chewing gum or confectionery product containing as active ingredients, a combination of sodium bicarbonate and casein phosphopeptide-amorphous calcium phosphate. The invention also concerns the chewing gums and confectionery products that can provide dental health benefits and methods for their preparation.

Description of the Prior Art:

The formation of dental caries in teeth has been well studied. Caries are understood to result from the accumulation of plaque on the teeth and the production of organic acids (plaque acids) when plaque microorganisms ferment sugars and starches in food. Before being washed away by saliva, the acids accumulate in the plaque long enough to lower the pH and to cause some of the enamel, a calcium-phosphorous mineral known as hydroxyapatite, to dissolve, that is, demineralize, which can lead to dental caries (tooth decay), and sensitivity.

Plaque itself, which is a sticky film of the oral bacteria and their products, can become calcified with the ultimate formation of a hard mineral on the teeth. Calculus, or tartar as it is sometimes called, is the solid, hard mass of calcified material deposited on and adhering to the surfaces of the teeth. As mature calculus develops it becomes visibly white or yellowish in color. Plaque formation can lead to gingivitis and subsequent periodontal disease.

Efforts have been made over the years to address the problem of plaque accumulation and the dissolution or demineralization of tooth enamel and the resultant formation of dental caries.

It is known to use sodium bicarbonate ($NaHCO_3$), in dental care for the purpose of reducing plaque and whitening teeth, and further for reducing oral malodor. Also known as baking soda or bicarbonate of soda or carbonic acid monosodium salt, sodium bicarbonate has long been used in dentrifrices such as pastes and oral rinses, often in combination with sodium chloride. It can buffer plaque acids, which cause demineralization of teeth, by returning the oral pH to a more favorable pH. In high concentrations, it is bactericidal against most periodontal pathogens. Sodium bicarbonate has found recent favor over alternatives for its low cost, safety if ingested, low abrasivity due to its high solubility, and compatibility with fluoride. Sodium bicarbonate has been used in chewing gums as a filler, a buffer, a dental plaque remover, as an abrasive when used in higher amounts.

US Patent 3,590,120 teaches a chewing gum containing a dental plaque removal agent and a dental polishing agent. Sodium bicarbonate is taught as a dental plaque removal agent. US Patent 4,170,633 discloses chewing gums for delivering alkyl sulfates as plaque inhibiting agents. Sodium bicarbonate is used as a buffer. US Patent 4,952,407 teaches chewing gums for reducing dental plaque containing glycerol mono laurate. Sodium bicarbonate is used as a filler. US Patents 5,702,687, 5,693,334, 5,618,517, and 5,629,035 teach chewing gums for dental care which contain organically encapsulated sodium bicarbonate.

Casein phosphopeptides-amorphous calcium phosphate complexes are known to have anticariogenic teeth strengthening effects when used as dentrifrices. The complexes, also known as CPP-ACP complexes or calcium casein peptone-calcium phosphate, are amorphous calcium phosphate stabilized by casein phosphopeptides. CPP-ACP depresses demineralization and enhances remineralization while buffering plaque acid. It acts by localizing calcium and phosphate ions in dental plaque at the tooth surface. This increased level of calcium and phosphate in dental plaque helps buffer plaque acid and maintain a state of supersaturation of calcium and phosphate in solution, i.e., in the saliva. The use of

casein phosphopeptides alone for prevention of caries and plaque formation is also known. The use of chewing gum as a carrier for CPP-ACP has been suggested.

US Patent 5,130,123 and 5,227,154 teach casein phosphopeptides in prevention of dental caries. WO 98/40406 teaches phosphopeptide-calcium phosphate complexes to provide anti-caries efficacy.

While it would be very desirable to combine in one delivery system the plaque reduction and tooth whitening benefits of sodium bicarbonate with the remineralization and strengthening of teeth provided by CPP-ACP, it is known that sodium bicarbonate will react with calcium phosphate to form calcium carbonate. Combining sodium bicarbonate with CPP-ACP, would be expected to precipitate calcium carbonate thereby diminishing the supply of calcium ions and concomitantly diminish the efficacy of CPP-ACP. A combination of the two dental care components in a system such as traditional oral rinses and pastes, would result in a diminishing or deactivation of the remineralization efficacy of the CPP-ACP.

SUMMARY OF THE INVENTION

The present invention concerns a method for providing dental hygiene which method employs a low moisture chewing gum comprising:

(a) from about 10% to about 95% by weight gum base,

(b) from about 0.1% to about 15% by weight of sodium bicarbonate, and,

(c) from about 0.01% to about 30% by weight of CPP-ACP.

The present invention further concerns a method for providing dental hygiene which employs a low moisture confectionery product comprising:

(a) from about 10% to about 95% by weight confectionery base,

(b) from about 0.1% to about 15% by weight of sodium bicarbonate, and,

(c) from about 0.01% to about 30% by weight of CPP-ACP.

The invention also concerns the chewing gums and confectionery products containing the active ingredients.

DETAILED DESCRIPTION OF THE INVENTION

The present invention, as stated above, concerns low moisture chewing gums and confectionery products which reduce plaque, whiten teeth, prevent tooth demineralization and provide tooth remineralization in the oral cavity. The chewing gums and confections contain as active ingredients, a combination of sodium bicarbonate and casein phosphopeptide-amorphous calcium phosphate complexes. The present invention overcomes the problem of combining the ingredients in an oral delivery system by use of a low moisture, solid system such as a chewing gum or a confection. By a low moisture chewing gum or confection is meant one that contains less than 2% moisture. The chewing gum is also preferably sugarless.

In the chewing gums and confections of the present invention the ingredients cannot admix prior to use by the consumer, that is, could not admix upon storage. The chewing gum and confections in effect "compartmentalize". i.e., separate the two components. In a further embodiment of the invention each component could be in a separate and discrete layer of gum or confection. In still another embodiment of the invention one or both of the components could be encapsulated to prevent contact until the gum or confection is consumed.

The chewing gums and confections may contain from 0.1% to 15% by weight of sodium bicarbonate and from 0.01% to 30% by weight of CPP-ACP. It is preferred to use from 0.1% to 10% by weight of sodium bicarbonate and from 0.01% to 10% by weight of CPP-ACP. For chewing gums it is desirable to have the CPP-ACP and sodium bicarbonate present in a weight ratio of approximately 1:5.

Chewing gums, because of prolonged contact with the oral cavity in use, and due to the fact that a gum base can provide for sustained release of the active components, provide an excellent delivery system for the active ingredients and are preferred. The invention also concerns confections, in particular candy confections, especially pressed candy confections. Conventionally pressed candy confections such as tablets contain about or less than 0.5% moisture and provide an excellent delivery system for the active ingredients.

Manufacture of chewing gums and confections such as pressed tablets are well known and are taught in E. B. Jackson, Ed. "Sugar Confectionery Manufacture", 2nd edition, Blackie Academic & Professional Press, Glasgow UK, (1990), at pages 259 and 236 respectively, and in R. Lee and E. B. Jackson, Eds. "Sugar Confectionery and Chocolate Manufacture", Chapman and Hall, UK, (1992), at pages 332 and 286 respectively.

The chewing gum can be any convenient formulation. The gum formulation can be sugar free or it can contain sugar. It generally comprises one or more natural or synthetic elastomers which is supplemented by conventional chewing gum ingredients. These ingredients include one or more solvents, plasticizers, fillers, flavoring agents, coloring agents and/or sweetening agents. Elastomers which are suitable for use herein include substances of vegetable origin such as chicle, jelutong, gutta percha, guayale and crown gum. Synthetic elastomers such as butadiene-styrene copolymers, isobutylene-isoprene copolymers, polyethylene, polyisobutylene, polyvinylacetate, and mixtures thereof are also useful. The elastomer generally comprises from about 14% to 50% by weight, preferably from about 20% to about 30% by weight, of the chewing gum composition. Polyvinyl acetates may also be used with the elastomers to provide stretch or elasticity to the gum.

The chewing gum composition can contain elastomer solvents to aid in softening the polymer component. Such elastomer solvents can include methyl, glycerol or pentaerythritol esters of rosins or modified rosins, such as hydrogenated, dimerized or polymerized rosins or mixtures thereof. Terpene resins, including polyterpene and mixtures thereof are also useful. The solvent can be employed in an amount ranging from about 10% to 75% and preferably about 15% to about 50% by weight of the chewing gum composition.

A variety of traditional ingredients used as plasticizers or emulsifiers such as lanolin, lecithin, glycerol monostearate, stearic acid, glycerol triacetate, triacetin, glycerine and the like can also be incorporated into the chewing gum composition to obtain a variety of textures and consistency properties. These additional materials also include waxes such as natural waxes, petroleum waxes and microcrystalline waxes and fats and oils including animal fats such as lard and tallow, vegetable oils such as soybean and cottonseed oil, hydrogenated and partially hydrogenated vegetable oil and cocoa butter. These ingredients

are generally employed in amounts of up to about 30 % by weight, preferably 1% to 25% by weight and more preferably from about 3% to about 7% by weight of the final chewing gum composition.

The chewing gum composition can additionally include conventional coloring agents such as titanium dioxide, in amounts up to 2% and fillers such as dicalcium phosphate, magnesium carbonate, aluminum hydroxide, alumina, aluminum silicates, talc, calcium carbonate, cellulose, and combinations thereof in amounts of from 5 to 35% by weight of the final composition.

The chewing gum composition may also contain bulk sweeteners including sugars such as sucrose, dextrose, maltose, fructose and the like or sugar alcohols such as sorbitol, mannitol, xylitol, maltitol, isomalt, erythritol and hydrogenated starch hydrolysates and combinations thereof. Bulk sweeteners may be present in amounts up to 90% by weight of the final composition. High intensity sweeteners such as aspartame, acesulfame salts, aliatame saccharin and the like may also be present. These sweeteners may be present in amounts of up to 1% by weight of the final gum composition.

The chewing gum may contain flavoring agents in addition to the enhanced flavoring compositions in amounts up to 3.5%. Generally any food additive such as those described in "Chemicals Used In Food Processing", publication 1274, pages 63-258, by the National Academy of Sciences, may be used.

The chewing gum is generally manufactured by methods known in the art by sequentially adding the various chewing gum components to any commercial mixer or extruder in a batch or continuous process. After the ingredients have been thoroughly mixed the mass is discharged and formed.

The preparation of confectionery formulations is historically well known and has changed little through the years. In general a hard boiled candy confection has a base composed of a mixture of sugar and other carbohydrate bulking agents kept in an amorphous or glassy condition having from about 0.5% to about 5% moisture. In the present application the moisture content is 2% or less. The base normally contains up to

about 75% sugar (sucrose) and up to 65% corn syrup, with a higher sucrose to corn syrup ratio. Further ingredients such as flavoring agents, sweetening agents, acidulants, colorants and so forth may also be added. Hard boiled candies may also be prepared from non-fermentable sugars such as sorbitol, mannitol, xylitol, maltitol, erythritol, hydrogenated starch hydrolysates and the like. A general discussion of the composition and preparation of hard confections may be found in E. B. Jackson, Ed. "Sugar Confectionery Manufacture", 2nd edition, Blackie Academic & Professional Press, Glasgow UK, (1990), at pages 129-169.

Such confectionery may be routinely prepared by conventional methods such as those involving fire cookers, vacuum cookers, and scraped-surface cookers also referred to as high speed atmospheric cookers. Once the candy mass has been properly tempered, it may be cut into workable portions or formed into desired shapes. A variety of forming techniques may be utilized depending upon the shape and size of the final product desired.

Soft candy confectionery includes fondants, caramels toffees, fudge, marshmallows and nougats and the like and may also include jams and jellies. The preparation of soft confections, such as nougat, involves conventional methods, such as the combination of two primary components, namely (1) a high boiling syrup such as a corn syrup, or the like, and (2) a relatively light textured frappe, generally prepared from egg albumin, gelatin, vegetable proteins, such as soy derived compounds, milk derived compounds such as milk proteins, and mixtures thereof. Further ingredients such as the enhanced flavoring agent, flavoring agents, additional carbohydrate bulking agent, colorants, preservatives, medicaments, mixtures thereof and the like may be added thereafter also under agitation. A general discussion of the composition and preparation of such confections may be found in E. B. Jackson, Ed. "Sugar Confectionery Manufacture", 2nd edition, Blackie Academic & Professional Press, Glasgow UK, (1990), at pages 170-235.

Compressed tablet confections, a preferred embodiment, contain particular materials and are formed into structures under pressure. These confections generally contain sugars or sugar substitutes in amounts up to about 95%, by weight of the composition, and typical tablet excipients such as binders and lubricants as well as the enhanced flavoring agent, flavoring agents, colorants and so forth.

The following examples are provided to illustrate the preferred embodiments of the invention.

Example 1

This example shows precipitation of calcium carbonate upon mixing sodium bicarbonate with CPP-ACP under conditions which mimic mixing the two components in the environment of the oral cavity for a brief contact period and under prolonged contact time.

The amount of CPP-ACP and sodium bicarbonate combined for the test were based upon an in vivo pre-test done to determine how much CPP-ACP and sodium bicarbonate would be expected to be extracted into the oral cavity, upon chewing, from a gum containing CPP-ACP and sodium bicarbonate in a 1:5 weight ratio present at approximately 1% CPP-ACP and 5% sodium bicarbonate.

The in vivo test was done to first determine the release of CPP-ACP. A five person panel chewed a gum containing 1% CPP-ACP. Release of CPP-ACP was determined as 2.43 mg/ml. Using this data and assuming a similar release for sodium bicarbonate, the concentrations of CPP-ACP and sodium bicarbonate released into the oral cavity were determined to be 0.3% CPP-ACP and 2% sodium bicarbonate for a final CPP-ACP concentration = 3 mg/ml. CPP-ACP and sodium bicarbonate at these concentration were incubated in a 30 ml pooled human saliva with moderate shaking at 37°C for 3 minutes to test precipitation upon consumption of the gum and at 1 hour to show how longer contact time would precipitate calcium carbonate. The resultant pH of the incubation solution was approximately 7. The solution was filtered, the retentate was rinsed with deionized H_2O to remove any soluble calcium and the result was analyzed for calcium content by Atomic Absorption analysis. As a control an aqueous solution of 30 g of a 0.3% CPP-ACP solution was pass through the filter paper. 0.3 mg of precipitated calcium was noted. Also, the same experiment was repeated for saliva and a 2% sodium bicarbonate solution and 1.7 mg of calcium was retained by filter paper. The incubation of 0.3% CPP-ACP with 2% sodium bicarbonate in 30 g saliva for 3 min. resulted 2.5 mg calcium retained by the filter paper

which calculates as about 0.5 mg calcium precipitation. The insoluble calcium accounted for 3.7% of total CPP-ACP precipitated in 3 minutes. Using the same calculation for the 1 hour incubation, 15.6 % of CPP-ACP interacted and precipitated.

The following table shows the results of various test periods:

Test	Calcium retained
30g of aqueous solution with 0.3% CPP-ACP	0.300 mg
30g of saliva with 2% $NaHCO_3$ stored at 37°C for 3 minutes	1.700 mg
30g of saliva with 0.3% CPP-ACP and 2% $NaHCO_3$ stored at 37°C for 3 minutes	2.500 mg
30g of saliva with 2% $NaHCO_3$ stored at 37°C for 1 hour	1.600 mg
30g of saliva with 0.3% CPP-ACP and 2% $NaHCO_3$ stored at 37°C for 1 hour	4.000 mg

The test showed that approximately 4% of the 1% of CPP-ACP is consumed in 3 min. and approximately 16% of the 1% in 1 hr. A concomitant reduction in activity could be expected. The result indicates that for the short period of time needed to release CPP-ACP and sodium bicarbonate from a chewing gum into the oral cavity (a 10 min. chewing of a gum containing 1% CPP-ACP and 5% of sodium bicarbonate) CPP-ACP has a very small probability of losing efficacy. However, as expected, interactions of the sodium bicarbonate and CPP-ACP increase with a longer time exposure, which may indicate potential loss of CPP-ACP efficacy during shelf storage in the presence of moisture.

<u>Example 2</u>

This example shows the efficacy of CPP-ACP in remineralization when used in a chewing gum containing CPP-ACP and sodium bicarbonate in the weight ratio of 1:5. A pellet-type chewing gum was formulated as follows:

Pellet Gum:

INGREDIENT	%
Gum Base	30.77
Softeners	0.23
Polyols	61.05
Intense Sweeteners	0.21
Flavors	1.57
Sodium Bicarbonate	3.76
CPP-ACP	0.71
Gum Arabic	1.70

The gum had a total delivery size (two pieces) of 2.9g providing approximately 20.6 mg CPP-ACP.

The gum was used in a test designed as a two-week product usage, double-blind, four-way crossover test with a one week rest between the crossover tests. A sugarfree gum formulated without the actives was used for comparison. The gums were chewed four times per day for 20 minutes each chewing. The test subjects met minimums for salivary flow rate. A removable palatial appliance with human-enamel, half-slab insets containing sub-surface demineralized lesion was used. The other half of each enamel slab was stored and used as the control demineralized lesion. Appliances were worn by subjects during gum chewing and 20 minutes after chewing. At the completion of each treatment the enamel slabs were removed, paired with their respective demineralized control and the enamel remineralization was measured by microradiography to determine the percent of remineralization of the test enamel slab vs. the demineralized enamel slab. The following table shows the resultant mean percent remineralization. Also provided for comparison is the mean percent remineralization obtained for a gum containing solely CPP-ACP as the active. (This gum delivered 18.8mg of CPP-ACP. The inventive gum containing 20.6 mg had an approximate 10% overage.)

Percent Remineralization:

Test:

Control (No Gum)	Sugarfree Gum	CPP-ACP/Sodium Bicarbonate Gum
$3.499 \pm 0.41\%$	$9.107 \pm 0.42\%$	$18.297 \pm 1.85\%$

Comparison:

Control (No Gum)	CPP-ACP Gum
$4.36 \pm 1.65\%$	$17.06 \pm 2.48\%$

The results demonstrate that CPP-ACP in the presence of baking soda results in significant remineralization when compared with a sugarfree gum as a control. The test further shows that the remineralization is equivalent to that provided by a gum containing CPP-ACP as the active.

CLAIMS

1. A method for providing dental hygiene which method comprises chewing a low moisture chewing gum comprising:
(a) from about 10% to about 95% by weight gum base; and,
(b) from about 0.1% to about 15%% by weight of sodium bicarbonate, and,
(c) from about 0.01% to about 30% by weight of CPP-ACP.

2. The method according to claim 1 wherein the gum is a sugarless gum.

3. The method according to claim 1 wherein the the gum comprises:
(a) from about 0.1% to about 10%% by weight of sodium bicarbonate, and,
(b) from about 0.01% to about 10% by weight of CPP-ACP.

4. A method for providing dental hygiene which method comprises chewing a low moisture confection comprising:
(a) from about 10% to about 95% by weight confectionery base,
(b) from about 0.1% to about 15% by weight of sodium bicarbonate, and,
(c) from about 0.01% to about 30% by weight of CPP-ACP.

5. The method according to claim 4 wherein the confection is a pressed candy confection.

6. The method according to claim 4 wherein the confection comprises:
(a) from about 0.1% to about 10%% by weight of sodium bicarbonate, and,
(b) from about 0.01% to about 10% by weight of CPP-ACP.

7. A chewing gum comprising
(a) from about 10% to about 95% by weight gum base; and,
(b) from about 0.1% to about 15% by weight of sodium bicarbonate, and,
(c) from about 0.01% to about 30% by weight of CPP-ACP.

8. The gum according to claim 7 wherein the gum is a sugarless gum.

9. The gum according to claim 7 wherein the the gum comprises:

(a) from about 0.1% to about 10%% by weight of sodium bicarbonate, and,

(b) from about 0.01% to about 10% by weight of CPP-ACP.

10. A candy confection comprising

(a) from about 10% to about 95% by weight confectionery base,

(b) from about 0.1% to about 15% by weight of sodium bicarbonate, and,

(c) from about 0.01% to about 30% by weight of CPP-ACP.

11. The confection according to claim 10 wherein the confection is a pressed candy confection.

12. The confection according to claim 10 wherein the confection comprises:

(b) from about 0.1% to about 10%% by weight of sodium bicarbonate, and,

(b) from about 0.01% to about 10% by weight of CPP-ACP.

ABSTRACT OF THE DISCLOSURE

The present invention pertains to a method for providing dental hygiene which method employs a low moisture chewing gum or confectionery product containing as active ingredients, a combination of sodium bicarbonate and casein phosphopeptide-amorphous calcium phosphate. The invention also concerns the chewing gums and confectionery products that can provide dental health benefits and methods for their preparation.

Docket No. 5852-07-LAV

COMBINED DECLARATION AND POWER OF ATTORNEY IN ORIGINAL APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are stated below next to my name; and that

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE: ORAL CARE CHEWING GUMS AND CONFECTIONS

the specification of which
[X] is attached hereto, or,
[ ] was filed on Not yet assigned as United States
(MM/DD/YY)
Application Number Not yet assigned or PCT International Application No. ________ and was amended on____________ (if applicable).
(MM/DD/YY)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which desginated at least one country other than the United States listed below and have also identified below, by checking the box, any foreign application(s) for patent or inventor's certificate, or PCT International application having a filing date prior to that of the application on which priority is claimed.

Prior Foreign Application(s) (if any):

Number	**Country**	**Filing Date**	**Priority Not Claimed**
None		(MM/DD/YY)	[ ]

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

Application No.	**Filing Date**
60/126,032	March 25, 1999 (MM/DD/YY)

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) or § 365(c) of any PCT International application designating the United States listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application or the PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which become available between the filing date of the prior application and the national or PCT international filing date of this application:

Docket No. 5852-07-LAV

Application No.	**Filing Date**	**Status (Patented) Pending, Abandoned)**
None	(MM/DD/YY)	

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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Charles W. Ashbrook.................(Reg. No. 27,610)
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, pursuant to 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor (given name, family name)	Shiuh John Luo
First Inventor's signature	Date: 1/13/2000
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